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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,186	12/07/2001	Sadeg M. Faris	Revco-0153USAOON00	6324
26665	7590	05/02/2007	EXAMINER	
REVEO, INC.			CHIN, PAUL T	
3 WESTCHESTER PLAZA			ART UNIT	
ELMSFORD, NY 10523			PAPER NUMBER	
			3652	
			MAIL DATE	
			DELIVERY MODE	
			05/02/2007	
			PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/017,186

Applicant(s)

FARIS, SADEG M.

Examiner

PAUL T. CHIN

Art Unit

3652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,6-9 and 16-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6-9 and 16-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 2, 2007, has been entered.

### ***Specification***

2. The disclosure is objected to because of the following informalities: it appears on page 10, lines 7,8, and 17, the phrase "n + x" should be changed to -- n + y -- (referring to level in a y axis) and on page 14, line 22, the reference number "850" should be changed to -- 950 -- (Figs. 11A and B). Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1,6-9, and 16-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant recites "the length of the openings on the holding surface level" are smaller than "the length of the openings at the intermediate level, and the length of the openings at the intermediate level, are smaller than the length of the suction level" in claim 1 and also recites "the first level defines a hole length of holes on the first level, a second thickness associated with the second level defines a hole length of a second level, and ....." in claim 16. The recitations of "the length of the openings" and "a hole length of

holes" are not clearly understood. The holes of the instant application are circular holes and it is unclear that "the length of the openings" refers to "the diameter of the opening or "the depth of the hole or the "distance between the end holes". Note that applicant fails to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1,6,8, and 16-19, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhandarkar et al. handler (5,967,577) (see PTO-892).

Bhandarkar et al. (5,967,577) discloses a handler for picking up an object, comprising a body (Fig. 3) having a plurality of openings including a holding surface level and a suction level, wherein the openings (54,54) at the suction level are larger than the openings (42,42) at the holding level, and further wherein the openings at the suction surface level are in fluid communication with at least a portion of the openings at the holding surface level, and a compressed air container (72), or an epoxy container, a conduit (70), and a controller (Col 5, lines 16-27), which are a vacuum source creating a pressure force, attached to the body at the suction surface level. Note that Bhandarkar et al.' handler (5,967,577) shows that the numbers of the openings (42,42) at the holding surface is greater than the numbers of the openings (54,54) at the suction surface level, and further shows at least one intermediate level between the holding surface and the

suction surface levels wherein the openings (50,50, or 52,52) of the intermediate level are larger than the openings (42,42) of the holding surface level and smaller than the openings (54,54) of the suction surface level. Similarly, the numbers of the openings (50,50, or 52,52) at the intermediate level is greater than the numbers of the openings at the suction surface level. Bhandarkar et al.' handler (5,967,577), as best understood, shows a holding surface level having a thickness which defines a length of the openings (42,42) and a period of the openings, as shown in figure 9, have the same distance or dimension. Bhandarkar et al.' handler (5,967,577) does not show the dimensional structure, i.e., each level has a thickness defining a length of the openings and a period which has the same distance or dimension. Note that Bhandarkar et al.' Handler shows spacers (37) (Fig. 3), which can be arranged to have different heights with the constraint to provide different spacing between the plates or levels (44,46,48) (Col. 6, lines 11-20). Accordingly, it would have been obvious to those skilled in the art to provide different thickness of the levels (46,48) (instead of providing spacers 37,37 which have different heights) on the Bhandarkar et al.' handler (5,967,577) to provide a continuous vacuum suction.

Regarding the dimension of the thickness or the length of the openings, Regarding the specific thicknesses of the different levels, it is noted that while applicant indicates that it is "the length of the openings on the holding surface level" are smaller than "the length of the openings at the intermediate level, and the length of the openings at the intermediate level, are smaller than the length of the suction level", but there have been no reason given as to why other thicknesses would to function just as well as intended. Moreover, it also would have been obvious to those skilled in the art to modify the thickness of each level to provide a desired vacuum pressure.

Re claim 8, Bhandarkar et al.' handler (5,967,577) shows the walls and baffles are formed of metal, aluminum (see Col 4, lines 29-35).

With respect to claims 1 and 16, Bhandarkar et al.' Handler further shows a vacuum source (74). Note that Bhandarkar et al.' handler (5,967,577) is capable of performing the functional limitations as recited in the claims.

Re claims 17-19, Bhandarkar et al.' handler (5,967,577) does not clearly show the structural dimensions such as the ratio of the handler body thickness (Fig. 3) to the holding surface hole diameter (42) is about  $10^7$  to about  $10^2$  or  $10^6$  to about  $10^4$ , or  $10^5$  to  $10^4$ . However, it would have been obvious to those skilled in the art to optimize the ratio of the thickness of the body and the hole diameter as listed above on the Bhandarkar et al.' handler (5,967,577) in order to manageably control the desired fluid flow. Regarding the specific ratios of the body thickness to the hole diameter, it is noted that while applicant indicates that it is desirable ratios vary from about  $10^7$  to about  $10^2$ , there have been no reason given as to why other ratios outside of the larger range would to function just as well as intended. It would appear that other ratios close to about  $10^6$  to about 99 would function as well as intended. Accordingly, there is lack of criticality for the particular claimed ratios. It is maintained that the figure 2 of Bhandarkar et al. handler (5,967,577) is similar to the provided figure 2 of the application.

7. Claims 7, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhandarkar et al.' handler (5,967,577) in view of Malcosky (3,809,506) (see PTO-892).

Bhandarkar et al. (5,967,577), as presented in section 5 above, do not show at least one or more micro-mechanical valves in the at least one or more openings. However, Malcosky (3,809,506) teaches a pump having an opening (see Fig. 3) and a valve (64)

being attached at the opening to close or open the opening. Accordingly, it would have been obvious to those skilled in the art to provide a mechanical valve or a micro-mechanical valve or each valve on each opening at each level of Bhandarkar et al.'s handler (5,967,577) as taught by Malcosky (3,809,506) in order to manageably control the fluid flow. It is also pointed out that the size of the hinge valve is an obvious to those skilled in the art to optimize with respect to the relative opening to control the flow.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bhandarkar et al. handler (5,967,577) in view of Ogawa (4,858,975) (see PTO-892).

Bhandarkar et al.' handler (5,967,577), as presented above, does not show the handler is being made of a semiconductor material (from the group consisting of silicon, III-V type semiconductors, II-IV type semiconductors, II-VI type semiconductor, IV-VI type semiconductors, Ge, C, Si-oxide, Si-nitride, and at least one of the foregoing materials). However, Ogawa (4,858,975) shows a wafer holder (27) being made of silicon for etching process (Col 6, lines 60-68). Accordingly, it would have been obvious to those skilled in the art to make the body of Lovegrove (2,572,640) with a silicon material as taught by Ogawa (4,858,975) to provide minimum contamination to the system.

9. Claims 1,6,8, and 16-19, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lovegrove (2,572,640) (see PTO-892).

Lovegrove (2,572,640) discloses a handler for applying vacuum holding force to a fragile object (19), comprising a body (Fig. 2) having a plurality of openings including a holding surface level and a suction level, wherein the openings (22,22 or 24,24) at the suction level are larger than the openings (18,18, or 14, 14) at the holding level, and further

wherein the openings at the suction surface level are in fluid communication with at least a portion of the openings at the holding surface level. It is pointed out that Lovegrove (2,572,640) also discloses a vacuum source (not shown) (see Col 5, lines 10-20) attached to the handle body (see Fig. 2) through a hose (30) at the suction surface level. Lovegrove (2,572,640) shows that the numbers of the openings (14, 14 or 18, 18) at the holding surface is greater than the numbers of the openings (22,22), or openings on the plate (20,23) at the suction surface level and also shows at least one intermediate level (20) between the holding surface and the suction surface levels wherein the openings (22,22) (see Fig. 1) of the intermediate level are larger than the openings (14,14,18,18) (Fig. 2) of the holding surface level and smaller than the openings (24,24) of the suction surface level. Similarly, the frequency of the openings (22,22) at the intermediate level is greater than the numbers of the openings (24,24) at the suction surface Level. Lovegrove (2,572,640) does show different thickness of levels as shown in figure 2, but does not specifically show the dimensional structure, i.e., each level has a thickness defining a length of the openings and a period which has the same distance or dimension. However, it would have been obvious to those skilled in the art to provide different thickness of the levels (46,48) with respect to the period on the Lovegrove (2,572,640) to provide a continuous fluid flow.

Regarding the dimension of the thickness or the length of the openings, Regarding the specific thicknesses of the different levels, it is noted that while applicant indicates that it is "the length of the openings on the holding surface level" are smaller than "the length of the openings at the intermediate level, and the length of the openings at the intermediate level, are smaller than the length of the suction level", but there have been no reason given as to why other thicknesses would to function just as well as intended. Moreover,



Art Unit: 3652

it also would have been obvious to those skilled in the art to modify the thickness of each level of Lovegrove (2,572,640) to provide a desired vacuum pressure.

Re claim 8, Lovegrove's handling device (2,572,640) is being made of lightweight metal (Col 1, lines 22-32).

Re claims 17-19, Lovegrove's handling device does not clearly show the structural dimensions such as the ratio of the handler body thickness (Fig. 3) to the holding surface hole diameter (42) is about  $10^7$  to about  $10^2$  or  $10^6$  to about  $10^4$ , or  $10^5$  to  $10^4$ .

However, it would have been an obvious to those skilled in the art to provide the desired ratio as listed above on the Lovegrove's handling device in order to manageably control the desired fluid flow.

10. Claims 7, 20, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Lovegrove (2,572,640) in view of Malcosky (3,809,506).

Lovegrove (2,572,640), as presented above, does not clearly show at least one micro-mechanical valve in the at least one of the openings. However, Malcosky (3,809,506) teaches a pump having an opening (see Fig. 3) and a valve (64) being attached at the opening to close or open the opening. Accordingly, it would have been obvious to those skilled in the art to provide a mechanical valve or a micro-mechanical valve on the at least one of the openings, or a plurality of valves on each level of Lovegrove (2,572,640) as taught by Malcosky (3,809,506) in order to manageably control the fluid flow.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lovegrove (2,572,640) in view of Ogawa (4,858,975) (see PTO-892).

Lovegrove (2,572,640), as presented above, does not show the handler is being made of a semiconductor material (from the group consisting of silicon, III-V type semiconductors, II-IV type semiconductors, II-VI type semiconductor, IV-VI type semiconductors, Ge, C, Si-oxide, Si-nitride, and at least one of the foregoing materials). However, Ogawa (4,858,975) shows a wafer holder (27) being made of silicon (Col 6, lines 60-68). Accordingly, it would have been obvious to those skilled in the art to make the body of Lovegrove (2,572,640) with a silicon material as taught by Ogawa (4,858,975) to provide minimum contamination to the device.

#### ***Response to Arguments***

12. Applicant's arguments with respect to claims 1,6-9, and 16-21 have been considered, but they are not persuasive.

#### **Bhandarkar et al. handler (5,967,577) or Lovegrove (2,572,640)**

Applicant argues that the prior art does not show "the varying thickness, which results in varied hole lengths, as defined in the amendment".

Regarding the dimension of the thickness or the length of the openings, Regarding the specific thicknesses of the different levels, it is noted that while applicant indicates that it is "the length of the openings on the holding surface level" are smaller than "the length of the openings at the intermediate level, and the length of the openings at the intermediate level, are smaller than the length of the suction level", but there have been no reason given as to why other thicknesses would to function just as well as intended. Moreover, it also would have been obvious to those skilled in the art to modify the thickness of each level Bhandarkar et al. handler (5,967,577) or Lovegrove (2,572,640) to provide a desired vacuum pressure.

**Conclusion**

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Marzinotto et al. (4,881,770) (see Pto-892) shows different thicknesses of the vacuum levels.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL T. CHIN whose telephone number is (571) 272-6922. The examiner can normally be reached on MON-THURS (7:30 -6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Mackey can be reached on (571) 272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PAUL T. CHIN  
Examiner  
Art Unit 3652

